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He Behen

Dated 18 October 2004

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1/77
02 OCT 03 0841468-1 002835
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Request for grant of a patent

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THE PATENT OFFICE
J
- 2 OCT 2003
NEWPORT

The Patent Office

Cardiff Road
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1. Your reference

PRW/P201381

2. Patent application number
(The Patent Office will fill in this part)

0323002.6

3. Full name, address and postcode of the applicant (underline all surnames)

Pro-Fit International Limited
Albion Mills
Albion Road
Bradford, BD10 9TF

Patents ADP number (if you know it)

8250300002

If the applicant is a corporate body, give the country/state of its incorporation

GB

4. Title of the invention

Apparatus for Imparting Stretch to Fabrics

5. Name of your agent (if you have one)

URQUHART-DYKES & LORD

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

Tower House
Merrion Way
Leeds LS2 8PA
United Kingdom

Patents ADP number (if you know it)

1644004 ✓

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number
(if you know it)

Date of filing
(day/month/year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing
(day/month/year)

8. Is a statement of Inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

Yes

a) any applicant named in part 3 is not an inventor, or
b) there is an inventor who is not named as an applicant, or
c) any named applicant is a corporate body.
See note (d))

Patents Form 1/77

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Continuation sheets of this form	0
Description	4
Claim(s)	0
Abstract	0
Drawing(s)	1

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Priority documents	0
Translations of priority documents	-
Statement of Inventorship and right to grant of a patent (<i>Patents Form 7/77</i>)	0
Request for preliminary examination and search (<i>Patents Form 9/77</i>)	0
Request for substantive examination (<i>Patents Form 10/77</i>)	0
Any other documents (Please specify)	0

11. I/We request the grant of a patent on the basis of this application.

Signature

URQUHART DYKES & LORD

Date

1 October 2003

12. Name and daytime telephone number of
person to contact in the United Kingdom

P R WHARTON - 0113 245 2388

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APPARATUS FOR IMPARTING STRETCH TO FABRICS

This invention relates to an apparatus for imparting stretch to fabrics and in particular relates to a way of controlling the stretch so imparted.

In our EP patent publication number 0705356 there is described an apparatus for imparting stretch to fabrics which comprises means for applying heat and pressure to a woven fabric, transport means for effecting relative movement between said heat and pressure application means and said fabric whereby passage of the fabric through the apparatus results in the yarn strands substantially across the width of the fabric being forced closer together, thus shrinking the fabric and imparting semi-permanent "ease" or "stretch" into the fabric. The fabric is subsequently fused to an interlining to stabilise the shrinkage and prevent it being lost in subsequent processing. Our EP patent publication no. 1200662 discloses a method of treating synthetic, heat-settable fabrics with this apparatus, and no interlining need be applied.

The fabric is generally in the form of strips, and a number of strips may be processed simultaneously going side by side through the apparatus.

If the strips or tapes have a repeat pattern, for example in the case of jacquard labels, it is very important that the shrinkage be constant so that, when the processed tapes are indexed on conventional 'cut and fold' label producing equipment, the labels will be of a consistent length. Even small variations in shrinkage can render the labels useless since label application equipment, including 'pick and place' systems and automatic type label sewing systems rely on accurately cut and folded labels for their operation. Variations in temperature and pressure of the process as well as processing speed can cause variations in the properties, e.g. degree of shrinkage, of the product so-formed.

The present invention seeks to provide an apparatus having improved control means so as to maintain a constant degree of shrinkage in the fabric treated.

According to the present invention, there is provided an apparatus for the treatment of fabric which comprises transport means for effecting relative movement between a heat and pressure

application means and the fabric, whereby the passage of the fabric through the apparatus results in the yarns substantially across the width of the fabric being forced closer together, thus imparting semi-permanent "ease" or "stretch" into the fabric, characterised in that fabric speed control means are employed downstream of the apparatus whereby to maintain the fabric output speed at a predetermined level.

The speed control means may comprise any suitable mechanism but preferably comprise nip rollers, which grip the fabric and may be driven at a constant, predetermined speed. This ensures that the fabric output speed is constant also. If speed control means, e.g. nip rollers, are also employed on the input side of the apparatus, the speed difference between the input and output means can be controlled and made constant thus ensuring that the fabric shrinkage is constant also.

To take an example, if 25% shrinkage is required in a particular fabric, the output rollers are set to run at 75% of the speed of the input rollers. The parameters of the apparatus are set to achieve a minimum fabric shrinkage level of 25% and the output rollers effectively stretch any over-shrunk fabric back to this value.

In general terms, the parameters of the apparatus can be altered by varying the temperature, pressure or throughput speed of the process.

In a preferred embodiment of the invention, additional control means is present to detect any under shrinkage. If the latter were to occur, a loop would appear in the tape prior to the output rollers. If this is detected action can be taken to adjust the parameters of the apparatus to correct the fault, i.e. increase the shrinkage of the fabric being treated.

Since the labels are usually synthetic material, e.g. polyester, there is often no need to fuse them to an interlining before subsequent use, but this may be done if desired.

The invention will be described further, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a diagrammatic plan view of an apparatus modified in accordance with the invention; and

Figure 2 is a side view corresponding to Figure 1.

Referring to the drawings, apparatus according to our above mentioned European patent publication number 0705356 B comprises a rubberised conveyor belt (20) driven by conveyor rollers (22,24) and a heated roller (26) which is held against the belt (20) in close proximity to roller (24) so as to apply heat and pressure to fabric strips or tapes (12) passing through the nip formed between the rollers (26) and (24). The strips (12) are fed onto the conveyor and the fabric strip direction is at right angles to the axis of the heated roller (26). The strips are progressed through the nip of the roller (26) and the conveyor (20) (Figure 2).

The result of this treatment is to force the strands which pass substantially across the width of the strip to draw closer together, as discussed in our above mentioned European patent publication, shrinking the fabric and imparting stretch to it.

In accordance with the invention, this apparatus is modified by the provision of driven output nip rollers (28) downstream of the apparatus. As illustrated an idler roller (30) is employed to accommodate the change in path of the strips (12).

In addition, speed control means, in this case driven nip rollers (32), are also employed on the input side of the apparatus. Thus the speed difference between the input and output means can be controlled and made constant thus ensuring that the fabric shrinkage is constant also.

In operation the input speed is set by adjusting the drive speed of the input rollers (32) and the parameters of the apparatus adjusted (heat and pressure of roller (26)) to give the desired level of shrinkage. The speed of the output rollers (28) can then be calculated and set, ensuring a constant degree of shrinkage in the strips (12) treated. If the strips (12) are strips of labels, their indicia will then line up exactly with subsequent cutting equipment and when cut will be of a consistent length. Such labels may be fused to a further interlining to stabilise the shrinkage, and thus stretch, of the labels which may then be incorporated into garments which themselves

have stretch properties without adversely affecting those properties as would be the case if they were non-stretch. Alternatively, where the labels are of a thermoplastic synthetic material, e.g. polyester, the mechanical stretch properties of the processed material may be sufficient such that no further fused interlining will be required.

Thus, in accordance with the invention, stretch labels can be processed and variability in shrinkage may be reduced or eliminated so that they are of consistent length for subsequent processing equipment such as cut and fold label producing equipment.

FIG. 2

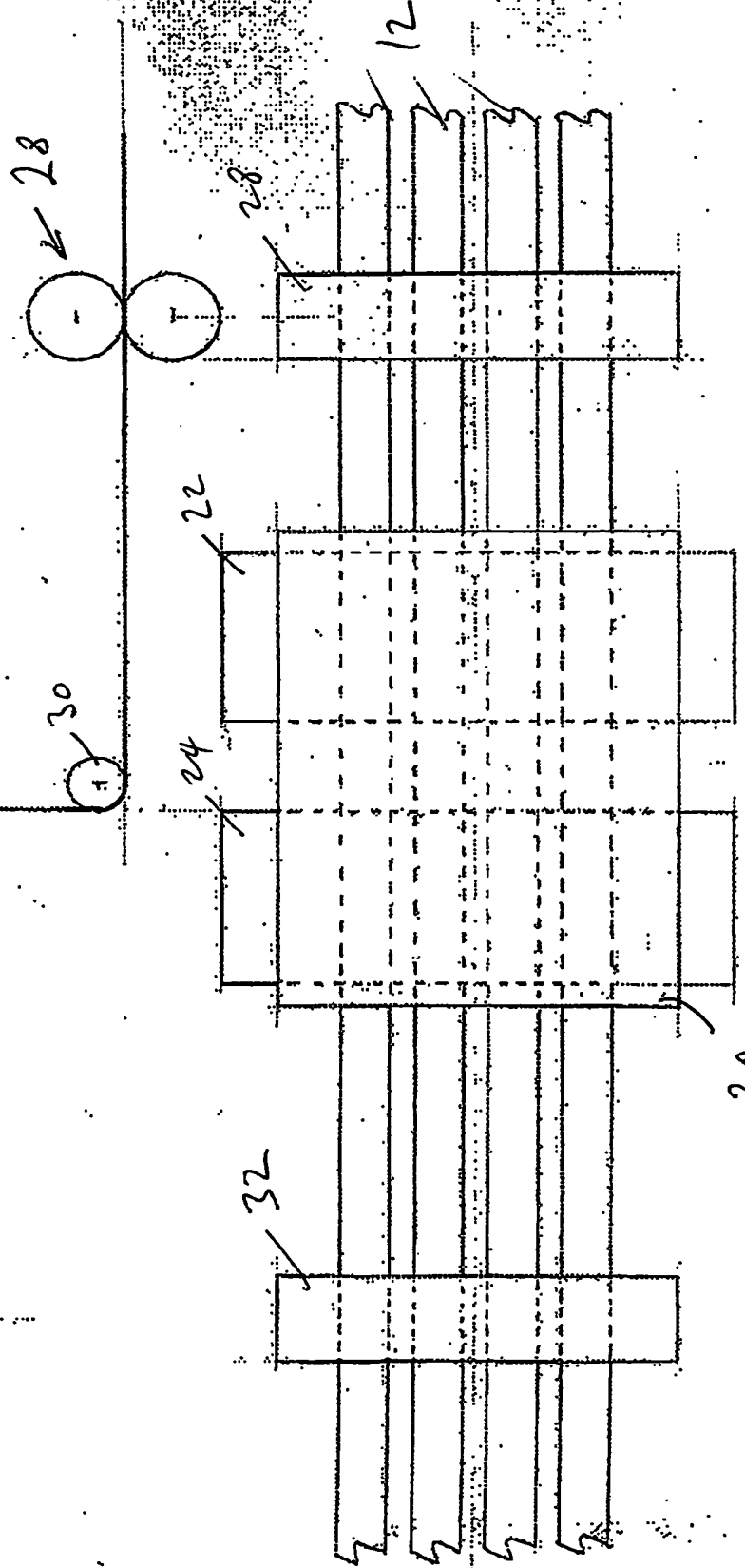
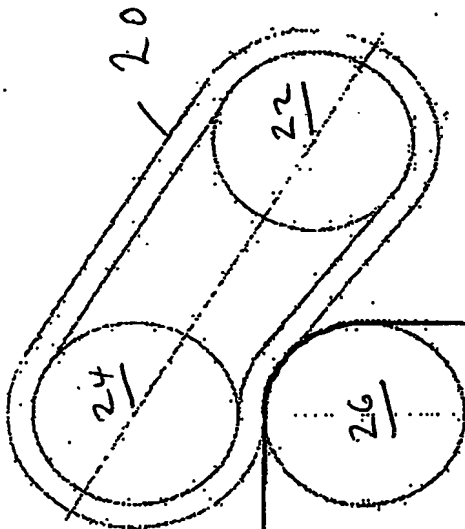


FIG. 1

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